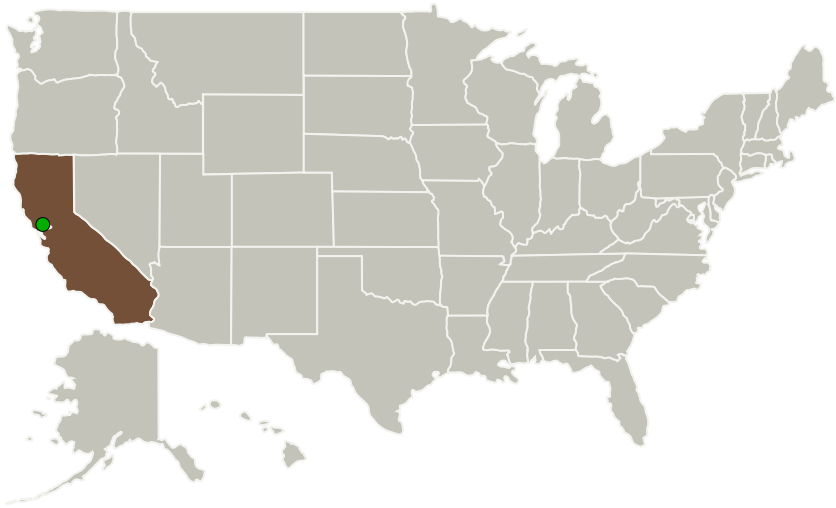
Safety Enhancement Technologies for Airport Ramp Area Operations, Phase I

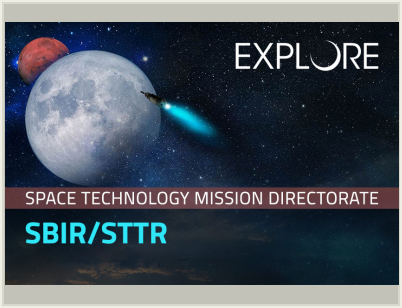
Completed Technology Project (2012 - 2012)

Project Introduction

NASA has been involved in developing advanced automation systems for improving the efficiency of air-traffic operations, reducing controller workload and enhancing the safety in the national airspace system. The recent accident at John F. Kennedy International Airport in New York involving an A380 and CRJ700 highlights an important safety concern on airport surface where aircraft operate very closely. Even over the airport surface the ramp area is an area of significant safety concern. The Flight Safety Foundation estimates that 27,000 accidents occur on airport ramps worldwide each year, and 243,000 people are injured. The objective of the current research is to develop safety enhancement technologies specifically for the ramp area leveraging state of the art surveillance technologies, image processing algorithms, nonlinear state estimation algorithms, and computationally efficient collision detection algorithms. Optimal Synthesis Inc (OSI) has an extensive record in modeling and designing next generational airport surface operations. OSI's is also partnering with Prof. Jason Rife from Tufts University to seek his expertise in modeling surveillance systems. Phase I research will demonstrate collision detection using sample image processing algorithms and inter-aircraft separation computation algorithms. Phase II research will develop more sophisticated tools to specialize the technologies for specific airport geometries.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Optimal Synthesis, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Los Altos, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
California

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140674)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Optimal Synthesis, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

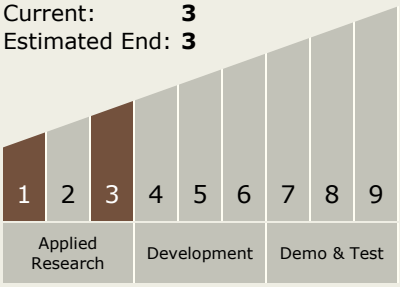
Carlos Torrez

Principal Investigator:

Veera V Vaddi

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System